



# HOSPITAL SEISMIC SAFETY

Office of Statewide Health Planning & Development

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California state law requires hospitals to evaluate their facilities, develop plans to meet seismic standards and ensure that their buildings are seismically sound.

This bulletin shares the latest news on OSHPD's partnership with the state's 515 acute care hospitals working to meet seismic safety deadlines. Also included are recent items that may be of interest to those involved in hospital construction, planning and design.

**To contact OSHPD about this bulletin, call (916) 326-3606.**

**Arnold Schwarzenegger**  
Governor  
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**Kimberly Belshé**  
Secretary  
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Director  
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## OSHPD Joins with the Design and Construction Community and UC Berkeley in Piloting Ways to Improve Delivery of Healthcare Projects

A group of designers, specialty contractors and construction managers assembled in 2006 to explore ways to improve the design and permitting processes for healthcare projects in California. Their goal was to identify process waste and root causes, and then work to develop more effective and efficient design and permitting workflow.

The group realized all would gain by collaborating within a wider community of Designers, Specialty Contractors, Construction Managers, Healthcare Customers, and the Office of Statewide Health Planning and Development (OSHPD), working toward a common goal of improving healthcare project delivery. They asked researchers from the Project Production Systems Laboratory at UC Berkeley (<http://p2sl.berkeley.edu/>) to lead a series of workshops, apply lean process improvement tools including Value Stream Mapping and Rapid Improvement Events, and help with extracting and documenting lessons learned. An open invitation was extended to all in the community to engage in this effort.

Since then, nine workshops have been held to address challenges and opportunities in current design and permitting processes.

### The first five workshops focused on:

1. Understanding and documenting the Goals and Expected Outcomes
2. Understanding and Benchmarking the Current Process including value-added and non-value-added work
3. Creating a Future State Map
4. Creating an Implementation Plan
5. Writing the Standard Work

With the future state map developed, a number of pilot projects were launched to test and refine innovations. Kaiser Permanente, St. Joseph's, Sutter Health, Stanford Medical Center, and UCSF are among the healthcare organizations involved. Pilot projects in the study are led by owners, by design-build teams, and by OSHPD as well. OSHPD also has offered updates on changes it is making to internal processes and interfaces with the design and construction community to improve the review process.

Our vision is to:

- Reduce the waste in design, permitting and construction of acute care facilities.
- Reduce costs associated with the current process, and increase the value of facilities.
- Level the workflow of the entire team and create an environment that keeps people involved in value-added work.
- Accelerate the overall delivery process to reduce risk associated with unpredictable variability (i.e., escalation, code changes).

The Goals of the workshops include:

- Engage Owners, OSHPD, Design Professionals and Construction Professionals in focused and collaborative process improvement.
- Map an alternate delivery process for the acute care hospital.
- Create Work Standards.
- Establish metrics to measure improvements.

Our vision for the outcome of the workshops includes a process manual of work standard, and a process map that defines:

- Process milestones
- Design deliverables
- Specific OSHPD and customer requirements
- Roles and responsibilities of all contributing parties

**For more information, please contact Dr. Glenn Ballard ([ballard@ce.berkeley.edu](mailto:ballard@ce.berkeley.edu) or 415-710-5531), Research Director at UC Berkeley's P2SL.**

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## HOSPITAL SEISMIC SAFETY

### Palomar's Modern Approach to Building Design

In 2004, San Diego area voters approved a \$496 million bond measure for a new hospital. When the 11-story, 300 bed Palomar Medical Center in Escondido opens in 2011 it will be the hospital district's flagship facility and North County's designated trauma center. With its planned 765,000-square-foot size, the medical center is one of the largest hospitals under construction in California and includes many notable features.

bed, and space for visitors with a sofa or pull down bed. To minimize errors and improve spacing, dashboards above the bed where medical devices are connected will be identical, and supplies will be stored in cabinets outside. Looking to the future with the construction of a new tower, the facility was designed with the possibility of expanding from the planned 300 beds to a 600 bed facility that can accommodate growth and demand.

#### Modern plan review

Palomar is the first major project to use the phased plan review method. It incorporates a new approach to the design and permitting of hospital projects. Instead of the structural designs being submitted all at one time, they are submitted and reviewed in phases as the design progresses. Ideally this will help catch and fix errors and omissions in the initial design process and significantly reduce the plan review time.

For Palomar, the time frame for the initial increments for structural work, such as foundation and frame, were significantly reduced. This allowed construction to start on the foundation and the ordering of steel to occur much sooner than would have resulted using the standard review process. Also, because of the flexibility of the phased review approach, the project has been able overcome minor setbacks in a manner that has lessened their impact on the project schedule.

#### Unveiling in the virtual world

While this state-of-the-art medical center is scheduled to open in 2011, its unveiling took place three years ago courtesy of the Internet-based Second Life Web site. Reconfigured to the virtual world, visitors can tour the facilities and visualize the amenities of the hospital which will ultimately serve one of the largest public healthcare districts in California. Humans in virtual form can learn about Radio Frequency Identification (RFID) enabled bracelets that not only track patients but automatically guide them to the appropriate areas of the facility based on the kinds of health services that they are scheduled to receive. Visitors can also take a virtual tour of a mock patient room, experiencing how a patient could have a full body imaging scan while the patient is still inside their room.

#### Built for the future

Back in the real world, the hospital's rooms have been designed for the convenience, safety and comfort of its patients, visitors and staff. All rooms will have bathrooms near beds, ceiling-mounted lift systems to assist patients in getting in and out of

#### Sustainable design

In addition to its cutting edge technology, Palomar West Medical Campus was designed to be eco-friendly. Palomar Pomerado Health hospital district made it a priority to use sustainable design, incorporating healthcare-specific issues that reduce sensitivity to chemicals and pollutants, and travel distances from parking facilities. In addition, the hospital will increase access to natural spaces by creating "healing" gardens, a conservatory and green plants on the roof to reduce energy use. Earth-toned colors and furniture will provide a soothing, healing environment with natural lighting in efforts to help patients recuperate faster. The rooms are designed to make patients feel like they are at home, and lighting in the rooms will be designed to dim and change colors to promote sleep.

#### Tips to Improve the Plan Review Process

- Ensure design professionals or consultants are familiar with hospital design and building codes in California.
- Continuous interactive discussion and dialogue between the design team, the contract reviewers and OSHPD will improve the process.
- Submit all long-lead reviews such as Geotech reports, Design Criteria, Alternate Methods of Compliance (AMC), and Material Testing reports far in advance of plan review submittals.
- Pre-consultations or preliminary reviews between the design team and OSHPD help prevent delays during the review process.
- Perform a quality control review prior to submitting designs.
- Submit complete packages. Provide complete specifications, calculations and drawings. Incomplete submittals will slow the process.
- Coordination between disciplines prior to submittal of segments is essential. Uncoordinated submittals slow down the review process which defeats the purpose of segmental review.

#### Ombudsman Line

If you have questions, unresolved issues or complaints about OSHPD's Facilities Development Division (FDD), call the Ombudsman at (916) 326-3608.

The line is available 24/7. If you have any questions, leave a voice message. Your call will be returned within two to three working days or as soon as possible. You may also e-mail your questions to: [Ombudsman@oshpdc.ca.gov](mailto:Ombudsman@oshpdc.ca.gov).

This line is not intended to handle specific questions regarding code interpretation or routine construction. These questions should be directed to OSHPD's plan review or field personnel.

#### LA Office

The Southern California office of FDD is located in the Metropolitan Water District Building in downtown Los Angeles, adjacent to the historic Union Station and within minutes of the region's transportation hubs such as Amtrak, Metro Red Line (subway) and MTA bus networks. Driving directions and parking in the vicinity may be found at [www.mwdh2o.com/mwdh2o/pages/about/union\\_station\\_parking\\_map.pdf](http://www.mwdh2o.com/mwdh2o/pages/about/union_station_parking_map.pdf).

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- Use reminder/checklists.
- Use FAQs, Policy Intent Notices (PINs) and Code Application Notices (CANs).
- Flexibility exercised by all parties is critical in addressing unforeseen schedule conflicts and design changes.

## HAZUS Updates as of July 2008

California hospitals have submitted approximately 250 buildings for HAZUS reevaluation.

OSHPD's Facilities Development Division has completed 125 evaluations with another 125 in progress.

Of the completed evaluations:

68 buildings or 54.4% of the buildings moved from the SPC 1 designation to the SPC2 designation.

51 buildings or 40.8% of of SPC1 buildings tested remained in that category.

6 buildings or 4.8% of the buildings submitted for reevaluation were ineligible.

Ineligible buildings are either Unreinforced Masonry (URM) Buildings (3) or already rated SPC-2 or higher (3).

### Of the 125 in progress:

- 10 buildings (8%) are recently arrived and are in triage.
- 17 building evaluations (13.6%) are under review by the SB 1953 unit.
- 98 buildings (78.4%) need additional information and are back with the owner.
- 50% of the buildings submitted for HAZUS have been completed.
- Response by the hospital owners is now "critical path."
- FDD is currently pretty close to being caught up.

**Links to Seismic Safety Extension Programs can be found at:**

#### SB 1953

<http://www.oshpd.ca.gov/fdd/sb1953/seismicext.pdf>

#### HAZUS

[http://www.oshpd.ca.gov/fdd/Regulations/Triennial\\_Code\\_Adoption\\_Cycle/HAZUS\\_Summary\\_Report.pdf](http://www.oshpd.ca.gov/fdd/Regulations/Triennial_Code_Adoption_Cycle/HAZUS_Summary_Report.pdf)

#### SB 1661

<http://www.oshpd.ca.gov/FDD/SB1661/index.html>

## 250 Hospital Buildings Apply for Reevaluation Under Ongoing HAZUS Program

The Office of Statewide Health Planning and Development's (OSHPD) voluntary program to reevaluate the seismic risk of hospital buildings subject to the 2013 seismic safety deadlines continues to move forward with hospitals requesting reevaluations for 250 hospital buildings. With the final filing date for HAZUS reevaluation open until July 1, 2009, OSHPD expects interest in the program to remain high.

In November of 2007, the Hospital Buildings Standards Commission approved the use of HAZUS, a state of the art risk assessment technology designed to measure the earthquake risk of hospitals buildings. OSHPD immediately began implementing the program by sending letters to all hospital with a buildings subject to the 2013 deadline, notifying them of the new HAZUS Reassessment Program.

Hospitals that are interested in applying for the program start the process by submitting a letter of intent to OSHPD specifying which buildings they would like reevaluated. Following the letter of intent, the hospital will need to submit a formal application and a \$250 filing fee for each building that they would like reevaluated. Additionally, the hospital will need to provide a seismic evaluation prepared by a structural engineer for each building along with structural drawings and a letter from a structural engineer confirming the presence or absence of certain structural deficiencies.

Once a complete HAZUS package is submitted to OSHPD, staff reviews the information to make sure all the necessary data to run the HAZUS application is included. The results of the reassessment are generally available six to eight weeks after the complete package has been received and evaluated.

Buildings that successfully meet the strict reassessment criteria will no longer be subject to the 2013 seismic safety deadlines, but will now be required to meet the 2030 seismic safety standards. Those buildings that fail the HAZUS reevaluation remain subject to the 2013 deadlines and must either retrofit, replace or remove all acute care services from those buildings by January 1, 2013.

**Results will be posted on OSHPD's Web site at [www.oshpd.ca.gov](http://www.oshpd.ca.gov). HAZUS documents can be sent to:**

### OSHPD

Facilities Development Division – HAZUS Unit

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Contact: Chris Tokas at (916) 654-8779 or E-mail at [ctokas@oshpd.ca.gov](mailto:ctokas@oshpd.ca.gov)

For more information on any of the above programs, contact:

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### 2015 Seismic safety extension deadline looms

In 2006, Governor Arnold Schwarzenegger signed Senate Bill 1661 (Chapter 679, Statutes of 2006) providing an opportunity for hospitals to receive an additional two year extension from the 2013 seismic safety deadlines. While hospitals must meet specific criteria, the extension will provide some flexibility to many facilities that are working to meet the 2013 deadline. It is important to note that one of the first major criteria deadlines is less than six months away. By the end of 2008, a facility must have submitted plans to OSHPD to be eligible for the 2015 extension.

To be eligible for the 2015 extension, hospitals must have:

- Broken ground and begun construction prior to applying for the extension.
- Submitted plans to OSHPD by January 1, 2009.
- Received a building permit two years prior to the 2013 deadline.
- Submitted a construction timetable to OSHPD.

Hospitals will have the ability to appeal a denied 2015 extension request to the Hospital Building Safety Board, and an extension can be revoked if the construction is abandoned or suspended for a period of at least one year, unless the hospital demonstrates that the suspension was caused by factors beyond its control.

Information on the 2015 extensions is available at: <http://www.oshpd.ca.gov/FDD/SB1661/index.htm>.

For more information about the 2015 extension contact Chris Tokas at (916) 654-8779 or E-mail at [ctokas@oshpd.ca.gov](mailto:ctokas@oshpd.ca.gov)

### Upcoming FDD Meetings and Seminars

<b>August 8, 2008</b>	10:00 a.m. - 4:00 p.m.	<b>HBSB Instrumentation Committee Meeting</b> Bateson Bldg. Rm. 470, Sacramento, CA
<b>August 9, 2008</b>	8:00 a.m. - 5:00 p.m.	<b>OSHPD / IOR Seminar</b> TBD / Irvine, CA
<b>November 5, 2008</b> <b>November 6, 2008</b>	10:00 a.m. - 4:00 p.m. 9:00 a.m. - 3:00 p.m.	<b>HBSB Full Board Meeting</b> Casa Munras Hotel 700 Munras Avenue Monterey, CA

#### California's Earthquake History

*California has experienced major, catastrophic earthquakes in the past and will certainly experience more in the future.*

*These quakes occurred throughout the state, not just in the more commonly perceived "earthquake zones" of Los Angeles and the Bay Area.*

- Geologic and archaeological evidence shows a long history of major earthquakes up and down the state as well as eastward to the Sierra. Little of the state is considered "earthquake free," and the majority of the state lies within active seismic zones.
- Earthquakes worldwide have killed millions, injured and left homeless tens of thousands, and caused inestimable economic losses. History has recorded more than 3,400 deaths attributable to California's earthquakes during the last century.
- Historical records reveal that California has experienced—on average—moderately strong earthquake (M6.02 to M6.9) every two to three years.
- Members of the 1769 Gaspar de Portola expedition wrote of the earth shaking, a phenomenon that occurs to this day.
- Maps from the US and California Geological surveys show that some areas have been relatively quiet seismically in the last 90 years but were active in the previous 100 years.